MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2015/2016

MAX1033 – 3D RENDERING FOR ANIMATION

(All sections / Groups)

05 MARCH 2016
2.30 p.m - 4.30 p.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 4 pages with 8 questions only.
2. Answer **FOUR** out of FIVE questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please write all your answers in the Answer Booklet provided.

QUESTION 1 :

a) Rendering is a process that involves a set of complex calculations to produce the final image of a 3D scene. **DESCRIBE FOUR** renderers that are commonly found in Autodesk Maya?
(8 marks)

b) What is raytracing?
(2 marks)

QUESTION 2 :

Graham is tasked to produce a turntable video of a 3D character which he has to UV and texture. He has lit his scene using an IBL and animated his turntable for 120 seconds (3000 frames).

a) What are UVs?
(2 marks)

b) During the UV process, Graham uses a checkerboard procedural to check his model for texture distortion. He realizes that the checkerboard pattern does not line-up correctly in the middle of his character's face. What caused the checkerboard pattern error in Graham's model?
(2 marks)

c) Graham, proceeds to render his scene in AVI format using the Mental Ray renderer. On frame 2945, the software crashes and stops the render. What should Graham have done to avoid re-rendering frame 1 to frame 2945?
(2 marks)

d) Graham is asked to render an extreme close-up of his character. When he zooms in his 3D camera, his character appears partially cut-off in the viewport. What attribute controls this aspect of Graham's 3D camera?
(2 marks)

e) What can Graham do to fix his problem in (d)?
(2 marks)

Continued .....

QUESTION 3 :

There are TEN Principles of Photoreal 3D.

a) This particular principle defines the reflection of the light source on the object's surface. It is a bright spot that the human eye uses to determine the surface's shininess and hardness. It is an important aspect to photoreal 3D as it is necessary for any 3D objects to have it in order to mimic the real-world attributes of the surface. Without it, the object would appear dull, soft and flat.
Name this principle.
(2 marks)

b) Give **ONE** example of the effect of principle (a) in the creation of shaders or materials for a 3D object.
(1 mark)

(c) **EXPLAIN** and provide **TWO** examples for the principle Surface Texture.
(4 marks)

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(d) This principle explains the phenomena in which light is an energy which most real-world objects will reflect. It is a concept that is vital in the understanding of indirect illumination. What is this principle called?
(2 marks)

(e) Based on your answer from Question 1(d), What option in Mental Ray that enables you to simulate this phenomenon?
(1 mark)

QUESTION 4 :

a) There are **SIX** types of lights available in Maya. Name **TWO** and **EXPLAIN** their respective functions.
(4 marks)

b) **LIST** down all **SIX** functions of shadows.
(6 marks)

Continued .....

QUESTION 5 :

a) Maya Software enables users to render motion blur. **EXPLAIN** the DIFFERENCES between the two types of motion blur available in Maya.
(4 marks)

b) **EXPLAIN** the **TWO** functions of the square brackets "[" and "]" in Maya.
(1 mark)

c) Render Passes and Render Layers helps in the managing a scene's render. Explain what are the differences between Render Passes and Render Layers.
(4 marks)

d) The 'Use Background' shader in Maya is used to render a 3D mesh invisible. The shader, however, is known to react unfavorably with a Mental Ray render. **NAME** the attribute in Render Stats which can be used to achieve the same effect.
(1 mark)

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